REMARKS

This application has been reviewed in light of the Office Action dated November 9, 2005. Claims 30-39 and 46-64 are pending in this application, with Claims 30, 34, 46, 48, 53, 60 and 62-64 being in independent form. Claims 40-45 have been canceled, without prejudice or disclaimer of the subject matter presented therein. Claims 47-64 have been added. Independent Claims 30 and 34 have been amended to still more clearly define what Applicants regard as the invention. Favorable reconsideration is requested.

The specification has been carefully reviewed and amended to correct matters of form and mistakes of a clerical, typographical, or minor character. No new matter has been added.

The Office Action rejected Claims 30-39 and 46 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,453,252 (*Laroche*), in view of U.S. Patent No. 5,432,252 (*Leighton et al.*).

Applicants submit that independent Claims 30 and 34, together with the remaining claims dependent thereon, are patentably distinct from the cited prior art for at least the following reasons.

The aspect of the present invention set forth in Claim 30 is directed to a method for fingerprinting an audio waveform. The method includes defining a codebook which represents a vector of one or more spectral features with one of a plurality of codes, where each code corresponds to a bin and represents a portion of a predetermined audio waveform. The method further includes dividing the audio waveform into a plurality of bins. For each bin, one

or more spectral features for the bin are computed. This computing includes (i) computing the one or more spectral features for a first group of data points within the bin, (ii) shifting some number of data points within the bin, and (iii) computing the one or more spectral features for a second group of data points within the bin. The audio waveform is represented with a string of codes from the codebook, where each code corresponds to a segment of the audio waveform and is temporally aligned in the string with the corresponding segment of the audio waveform.

Applicants point to Claim 30, which recites "defining a codebook which represents a vector of one or more spectral features with one of a plurality of codes, each code corresponding to a bin and representing a portion of a predetermined audio waveform." Claim 30 further recites that an audio waveform is represented by "a string of codes from the codebook, each code corresponding to a segment of the audio waveform and temporally aligned in the string with the corresponding segment of the audio waveform."

Laroche, as understood by Applicants, relates to identifying musical pieces by monitoring the content of an audio signal. According to *Laroche*:

> [A]nalyzing [an] audio signal by use of a Short-Term Fourier Transform, then forming a number of derived signals that represent the energy in dB in N selected frequency bands. These energy signals are recorded for, say, the first 10 seconds of the audio signal, yielding N energy signals of M points each. Each of these N signals are then differentiated with respect to time, and the resulting signals undergo a Fourier Transform, yielding N frequency-domain energy signals of M_F points each. The magnitude of the first few values of these frequency-domain signals are then extracted and concatenated to form the fingerprint.
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> As depicted in FIG. 1, a short-term Fourier transform 10 is calculated on the incoming signal 12. The magnitudes of the FFT bins 14 are summed 16 within predefined frequency bands, and the results expressed in dB 18, are processed by a first-order difference filter 20 (and , optionally, by a non-linear smoothing filter 21). A second FFT 22 is calculated on the first order difference signal and magnitudes 24 are utilized as the fingerprint.

Col. 2, lns. 35-48, 54-62. Nothing has been found in *Laroche* that would teach or suggest the steps of "defining a codebook", much less "representing the audio waveform with a string of codes from the codebook", as those steps are recited in Claim 30.

Leighton et al., as understood by Applicants, relates to providing secure communications. Apparently, *Leighton et al.* teaches how to compute a signature given a secret key, and how to verify the signature given a public key. Col. 7, ln. 65 - col. 8, ln. 16. According to *Leighton et al.*, "[a]ll known signature schemes (including the present invention) require the existence of a secure hash function in order to be secure against forgery." Col. 8, lns. 17-19. Nothing has been found in *Leighton et al.* that would teach or suggest "defining a codebook which represents a vector of one or more spectral features with one of a plurality of codes, each code corresponding to a bin and representing a portion of a predetermined audio waveform" or "representing the audio waveform with a string of codes from the codebook", as recited in Claim 30. Applicants note that cryptographic hashing functions such as the hashing functions described in *Leighton et al.* typically involve generating a completely different hash code when the underlying data changes slightly (*e.g.*, merely changing by one bit) using a secure hashing function rather than a codebook, making it unsuitable for identifying multimedia data for which it

is required that different versions of the same content yield the same or substantially the same signature. A codebook as utilized in one embodiment of the present invention may be understood by referring, for example, to the specification at pages 18-19, which describes, among other things, mapping a large set of feature vectors into a smaller representative indexed set of codewords designated as the codebook.

Applicants submit that a combination of *Laroche* and *Leighton et al.*, assuming such combination would even be permissible, would fail to teach or suggest "defining a codebook which represents a vector of one or more spectral features with one of a plurality of codes, each code corresponding to a bin and representing a portion of a predetermined audio waveform" or "representing the audio waveform with a string of codes from the codebook", as recited in Claim 30.

Accordingly, Applicants submit that Claim 30 is patentable over the cited art, and respectfully request withdrawal of the rejection of that claim under 35 U.S.C. § 103(a).

Independent Claims 48 and 52 are computer program product and apparatus claims respectively corresponding to method Claim 30, and are believed to be patentable for at least the same reasons as discussed above in connection with Claim 30. Additionally, independent Claims 34, 46, 53, 60 and 62-64 include the use of a codebook which represents a vector of spectral features with corresponding codes, and representing an audio waveform with a string of codes (*e.g.*, hash codes) from the codebook, as discussed above in connection with Claim 30. Accordingly, Claims 34, 46, 53, 60 and 62-64 are believed to be patentable for at least the same reasons as discussed above in connection with Claim 30.

A review of the other art of record has failed to reveal anything that, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as prior art against the independent claims herein. Therefore, those claims are respectfully submitted to be patentable over the art of record.

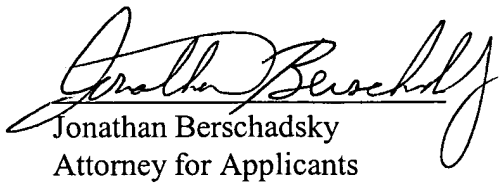
An Information Disclosure Statement is submitted herewith.

The other claims in this application depend from one or another of the independent claims discussed above, and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, individual consideration or reconsideration, as the case may be, of the patentability of each claim on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,



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